

8050A-01

Digital Multimeter

Addendum

P/N 683490
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ADDENDUM

MODEL 8050A-01 DIGITAL MULTIMETER

The information presented on the following pages should be used in conjunction with the commercial manual for the Model 8050A Digital Multimeter.

WARNING PAGE

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe the safety precautions.
Learn the areas where potentially hazardous voltages may be present
in the instrument.

Do not work inside the instrument unless you are qualified to do so.

Before working inside the instrument, turn power off and ground
points of high potential before touching them.

CAUTION

The Model 8050A-01 contains a Rechargeable
Battery Pack. The unit is shipped with the batteries installed.

To avoid instrument damage do not operate the unit with the
batteries removed.

ADDENDUM

The information for the Model 8050A Digital Multimeter is ammended as follows:

OVERALL MANUAL

Change Model 8050A to Model 8050A-01.

Add the "Warning" page.

SECTION 1 - INTRODUCTION AND SPECIFICATIONS

Add the following specifications to Table 1-4:

WEIGHT (8050A-01): 1.76 kg (3 lbs, 14 oz)
STORAGE TEMPERATURE: -55°C to 65°C (-67°F to 149°F)

Add the following paragraphs:

1-44. ITEMS FURNISHED

1-45. The Model 8050A-01 is supplied with the following:

1. An 85RF High Frequency Probe
2. A set of test leads
3. A three-connector power cord

These items are described in Section 6.

1-46. ITEMS REQUIRED FOR OPERATION

1-47. The following items are supplied with the Model 8050A-01 and are required for operation:

1. Two test leads (one red, one black)
2. One three-connector power cord (Required for ac line operation. The 8050A-01 may be operated without the power cord if the batteries are charged.)

NOTE

The Model 8050A-01 is supplied with a rechargeable Battery Pack (four Ni-cad batteries).

The batteries must be installed for both battery and ac line operation.

1-48. TOOLS AND TEST EQUIPMENT

1-49. The tools required for maintenance of the Model 8050A-01 are as follows:

1. Tool Kit TK-100/G
2. Tool Kit TK-101/G
3. Tool Kit TK-105/G

1-50. The test equipment required for maintenance of the Model 8050A-01 are listed in Table 1-5.

Table 1-5. Test Equipment Required for Maintenance

ITEM	TYPE
Digital Multimeter	Fluke 8020B
Calibrator System	
Calibrator	Fluke 5100B
Power Amplifier	Fluke 5205A
Interface/Buffer	Fluke Y5000
Oscilloscope	Tektronix 7704A
Calibration Leads	Pomona 2BC-24 24" shielded cable with banana plugs at both ends

1-51. STORAGE INSTRUCTIONS

1-52. The 8050A-01 is not designed for outside storage without the benefit of special cover or packing. This cover or packing must be sufficient to protect the instrument from direct exposure to water, salt spray, sand and dust. Long term exposure to adverse weather conditions such as constant direct sunlight and ice or snow accumulation should also be avoided.

1-53. The 8050A-01 should be stored inside in an area free from dust and sand accumulation. If dust and sand accumulations cannot be avoided, the instruments should be covered by a tarp or the equivalent. Otherwise, the environmental storage conditions are as follows:

Storage Temperature: -55°C to 65°C (-67°F to 149°F)

SECTION 4 - MAINTENANCE

On page 4-1 delete the last two sentences from paragraph 4-5 starting with: Shipping information and

On page 4-1, at the end of paragraph 4-6 add the following paragraphs and caution:

4-6a. PREPARATION FOR RESHIPMENT

4-6b. If reshipment of the 8050A-01 is required, use the original shipping container.

CAUTION

To avoid damage to delicate and/or static sensitive devices and assemblies, always reassemble the instrument for reshipment.

4-6c. Do not disassemble the instrument for reshipment. If component parts or assemblies in the instrument require reshipment, reassemble the instrument and pack it in the original shipping container. Reship the entire unit.

On page 4-3 add the following reassembly procedures after step 8 of paragraph 4-14:

4-14a. Reassembly Procedure

4-14b. Reassembly of the 8050A-01 is essentially a logical reversal of the access procedures. However, the order in which the reassembly is performed is important. The following procedure assumes that the instrument has been disassembled to the lowest assembly level. That is, all assemblies that can be separated without the aid of a soldering iron have been separated:

CAUTION

To prevent instrument damage, make sure that the plastic shield-insulator is installed between the aluminium shield and the pcb wiring patterns.

1. Install the large aluminium shield and its plastic insulator on the bottom of the larger half of the Main PCB Assembly. See Figure 5-1 for the correct location and orientation. One screw (6-32 x 1/2) holds the shield in place.
2. Install the small aluminium shield on the component side of the larger half of the Main PCB Assembly. The metal spacer on the shield faces away from the pcb. When the shield is correctly positioned the spacer is near the center of the pcb. Two screws (6-32 x 1/2) hold the shield in place.
3. Install the Front Panel on the larger half of the Main PCB Assembly. Use the function switches as a guide for properly orienting the Front Panel with the pcb. Notice that guides are provided on the sides of the Front Panel to ensure proper pcb alignment. Also, slots on the back of the Front Panel require alignment of both shields to properly seat the Front Panel on the pcb. Three screws (6-32 x 1/2) along the top of the Front Panel hold it to the pcb.
4. Connect the Front Panel Input Connectors to the red, black, and white wires on the Main PCB Assembly. The red and black wires connect by pressing them onto the back of the V/kOhm/S (red) and the COMMON (black) terminals, respectively. The white wire fits into the mA terminal as a spring contact for the current protection fuse, F1. The fuse and the fuse cap must be removed before the white wire can be installed. The contact on the end of the wire and a coil spring are fed through the rectangular hole on the slotted side of the mA connector housing. Then the wire is pressed into the slot. Install fuse F1 and its fuse cap.

5. Install the Display (LCD Bracket and LCD) on the smaller half of the Main PCB Assembly. See page 601-9, Figure 601-2 for assembly details. Page 601-11, Figure 601-2 provides location and orientation detail. Two self threading screws secure the Display Assembly to the PCB.

6. Install the flexible flat cable that connects the large and small halves of the Main PCB Assembly together. Correct pcb positions to accept the cable are shown in Figure 601-2, pages 601-10 and 601-11. (The cable is identified as MP13.) The ends of the cable fit over two alignment pins on each pcb. The silver colored (conducting) side of the cable faces the pcb. A plastic retainer with a rubber insert fits over the alignment pins on each end of the cable. Two screws (4-40 x 1/4) secure the plastic retainer to the alignment pins ensuring good cable to pcb connection.

CAUTION

To avoid instrument damage do not force fit the smaller half of the Main PCB Assembly into position. A variety of guides and alignment features require that this pcb be properly aligned prior to securing it into position with screws.

7. Position and secure the smaller half of the Main PCB Assembly to the Front Panel. The smaller pcb is lifted and folded over the larger pcb so that the component sides of both pcbs are facing. The display side of the smaller pcb is positioned in a guide located on the same side of the Front Panel. The front part of the pcb is then positioned under the two plastic tabs (with holes) on the back of the Front Panel. Three screws (6-32 x 1/4) secure the pcb in position: two in the Front Panel Tabs, and one at the rear-center of the pcb.

8. Install the two halves of the Battery Pack and connect the red and black wires from each pack to appropriate terminals on the Main PCB Assembly (red to positive, black to the remaining connector). See page 601-10, Figure 601-2 for the location of these connectors.

9. Install the 8050A-01 in its case. Match the hole in the rear of the case with the power connector on the pcb to ensure a proper match. One screw (6-32 x 1/2) on the rear panel holds the instrument in its case .

On page 4-11, add the following paragraphs after Table 4-13:

4-52. REPAIR INSTRUCTIONS

4-53. The repair procedures for the 8050A-01 are described in two parts, mechanical repairs and electrical repairs. Mechanical repairs are defined as external part replacement (e.g., fuse, power cord, handles), battery pack replacement, display (LCD) replacement, and internal hardware replacement. Electrical repairs are defined as circuit repairs internal to the instrument other than battery, LCD, and/or miscellaneous hardware replacement.

4-54. Mechanical Repair

4-55. The following items are repaired by direct replacement. Most of the items in the list are supported by a replacement procedure. These procedure locations are defined by a paragraph number following the listed item. The remaining items in the list, test leads and power cord, do not require a replacement procedure.

REPLACEMENT PART	REPLACEMENT PROCEDURE LOCATION (Paragraph no.)
Display (LCD)	4-11, 4-13
Fuses	4-17
Fuse F1	4-19
Fuse F2	4-20
Fuse F3	601-14
Battery Pack	601-12
Calibration	4-14, 4-43
Jumpers	
Misc. Hardware	Addendum 4-56
Power Cord	None Required
Test Leads	None Required

4-56. MISCELLANEOUS HARDWARE

4-57. Locations and descriptions for miscellaneous hardware items (nuts, bolts, washers, etc.) used in the 8050A-01 are given in the List of Replaceable Parts starting on page 601-2. Repair of these items is accomplished by direct replacement.

4-58. Electrical Repair

4-59. Electrical repairs to the 8050A-01 are defined as those repairs that require component replacement (other than fuses and general hardware) on printed circuit boards. Item that fall into this category include:

- Microprocessor U17
- Crystal (Y1)
- Varistors (RV1, RV2, and RV3)
- Resistors (R1 and R2)

4-60. Access procedures suitable for electrical repair are given earlier in the Maintenance Section under Access Information, paragraph 4-8.

4-61. MICROPROCESSOR U17

4-62. Integrated circuit U17 is a 40-pin nonrepairable plug-in device. The device is mounted in a 40-pin socket so that it may be unplugged and replaced without the aid of a soldering iron. Removing and replacing U17 with a known good device is the recommended procedure for isolating and or repairing a malfunction caused by the device.

4-63. To remove and replace U17 proceed as follows:

1. Remove the case from the 8050A-01.

2. Refer to the Main PCB Assembly in Figure 5-2 (page 5-10) to locate the position of U17.

3. Remove the Battery Pack, next to U17, from the pcb.

4. Insert an IC removal tool between the bottom of U17 and its socket. Work the tool in a rocking motion to free the IC from its socket.

4-64. SOLDERED COMPONENTS

NOTE

Soldering operations required for repair shall be accomplished in accordance with MIL-STD-454. A vacuum operated desoldering tool shall also be used whenever desoldering is required. Limit the soldering iron wattage to 25 watts maximum.

4-65. Use the following general procedure for making all repairs that require soldering:

1. Refer to the appropriate access procedure given earlier in the maintenance section, paragraph 4-8.

2. Perform the procedure(s) necessary to access the defective component so that it may be removed using a soldering iron.

3. Remove and replace the defective component using standard soldering practices.

4. Reassemble the 8050A-01.

On pages 5-6 and 601-5 make the following changes:

SECTION 5 - LIST OF REPLACEABLE PARTS

In Table 5-2 on page 5-6 make the following changes:

Change:	MP1	BEZEL, LCD	479642	89536	479642	1
To:	MP1	BEZEL, LCD	683458	89536	683458	1
Change:	MP2	BRACKET, LCD	471730	89536	471730	1
To:	MP2	BRACKET, LCD	683466	89536	683466	1
Add:	MP30	DISPLAY WINDOW	683441	89536	683441	1

SECTION 6 - OPTION AND ACCESSORY INFORMATION

In Table 601-2 on page 601-5 make the following changes:

Change:	MP1	BEZEL, LCD	479642	89536	479642	1
To:	MP1	BEZEL, LCD	683458	89536	683458	1
Change:	MP2	BRACKET, LCD	471730	89536	471730	1
To:	MP2	BRACKET, LCD	683466	89536	683466	1
Add:	MP30	DISPLAY WINDOW	683441	89536	683441	1

